# THE SPRUCE BUDWORM SITUATION IN ARIZONA AND NEW MEXICO, 1955

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## Introduction

Initial extensive surveys for spruce budworm (Choristoneura fumiferana) infestations in New Mexico and Arizona were completed during June and July 1954. The survey was carried on by aerial methods devised by the Pacific Northwest Forest and Range Experiment Station which provided for in place mapping of all infestations visible from the air. Mr. W. J. Buckhorn of the Portland Forest Insect Laboratory was detailed to act as Chief Observer and to assist J. W. Bongberg and R. K. Bennett of the Albuquerque Forest Insect and Disease Laboratory in the operation.

That survey determined that approximately 1,000,000 acres of mixed conifer and spruce-fir forests in New Mexico and Arizona were infested by the insect. Funds were made available to the U.S. Forest Service to treat 446,611 acres of infested timber in New Mexico in 1955. As only a portion of the infested lands were treated it became necessary to re-appraise those areas to which no treatment was applied. In addition, appraisal surveys were completed on previously unreported infestations on Mt. Taylor, Cibola National Forest, and in the Chuska Mountains of the Navajo Indian Reservation.

As aerial methods were not adaptable in those areas that had been previously surveyed by air and because of the lack of an observer, ground survey methods were used in all areas except the Apache National Forest.

The ground surveys were completed by three and four man crews. A 5 percent cruise was made, using the strip method. Stations were established at every 10 chains and the population and defoliation noted. Degrees of defoliation were then mapped from the tally sheets.

## Results of the Survey 1/

### 1. Pecos Unit

The infested acreage as determined by the 1954 aerial survey was 260,800 acres, of which 115,558 acres were treated. Surveys of the remaining 145,242 acres, much of which is in the Wilderness Area of the Santa Fe National Forest, reveals that the defoliation continues light to moderate. Most of the heavily defoliated areas were treated during the Spruce Budworm Control Project of 1955.

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1/ For location of units in following discussion see the appended maps.

2. Jemez Unit

The infestation on the Jemez Unit as determined by the 1954 aerial survey included a total of 247,520 acres. Treatment by aerial application of DDT covered 151,022 acres of the areas defoliated by the budworm. Appraisal surveys of the remaining 96,498 acres revealed that defoliation continues at the same intensity as reported in the 1954 aerial survey, light to moderate, with a few areas of heavy defoliation on Baca Location No. 1 and on the Los Alamos Withdrawal Area. Efforts to entice the New Mexico Timber Co., owner of the timber rights on Baca Location No. 1, to cooperate in a spray program were to no avail. It will remain as a source of re-infestation to treated National Forest Lands. It is entomologically unsound to treat areas of infestation immediately adjacent to the land controlled by this company. Treatment may be necessary every two to three years surrounding such areas to preclude mortality of defoliated trees.

3. Tierra Amarilla Unit

The aerial survey of 1954 disclosed 142,080 acres defoliated by the spruce budworm to varying degrees. The acreage treated during the course of the Spruce Budworm Control Project was 104,305. Defoliation on the remaining 37,775 acres continues light to heavy. Much of the untreated area is scattered throughout several private holdings.

4. Sacramento Unit

The entire infested area, 75,726 acres, was treated during the course of the Project in 1955. Control was good. Appraisal surveys and post control surveys were considered unnecessary.

5. Mt. Taylor Unit

The aerial survey of 1954 disclosed 4,640 infested acres in this unit. A total of 6,827 acres were treated in 1955. An additional 3,840 acres infested with the spruce budworm was found during the appraisal survey of 1955. Defoliation was classed as follows:

| | Acres |
|---|---|
| Light | 1,600 |
| Moderate | 1,170 |
| Heavy | 1,070 |
| | 3,840 |

This area of infestation was missed by both the aerial survey of 1954 and the ground check of the same year. Trees being defoliated by the budworm are for the most part Douglas fir. The area was sprayed for spruce budworm control in 1953.

6. Kaibab Unit

The appraisal survey of 1954 estimated that 111,200 acres of mixed conifer type was being defoliated by the budworm. Funds were not made available during 1955 to apply control measures to this unit. The appraisal survey of 1955 disclosed that the infestation on the Kaibab National Forest and on Grand Canyon National Park remains serious. Approximately 40,000 acres are suffering from moderate to heavy defoliation. A total of 30,000 acres are on Forest Service lands and 10,000 acres are on lands controlled by the National Park Service. During the past year there has been no decline in the infestation and it is feared that heavy mortality will occur if control measures are not taken.

7. Apache Unit

An aerial survey of this unit made by Frank M. Yasinski in September 1955 indicates that the acreage infested is approximately the same as reported by the aerial survey of 1954. The budworm defoliation has not increased in intensity, nor has it spread to other areas in the unit.

8. Chuska Unit (Navajo Indian Reservation)

Spruce budworm activity was first noted on the Chuska Unit of the Navajo Indian Reservation in August of 1955. Defoliation was of sufficient intensity that an appraisal survey was deemed necessary. A 4-man crew under the direction of Joseph A. Steeley made a 5 percent ground survey of the area the latter part of August 1955. The infestation for the most part occurs in mixed conifer type. The most severe damage is being suffered by understory trees, mixed fir types, where the overstory consists of ponderosa pine. The defoliation is scattered over approximately 20,000 acres of timbered land which makes up the unit. The unit is now being appraised as to its potential as a timber reservoir for the Navajo Tribe. Plans call for the establishment of mills in the area in the next 10 years. The degree of defoliation and the acres involved as determined by the 1955 appraisal survey are as follows:

| Degree of Defoliation | Number of Acres |
|---|---|
| Light | 9,826 |
| Moderate | 1,499 |
| Heavy | 1,175 |
| Total | 12,500 |

## Summary

Appraisal surveys made in 1955 reveal that extensive areas of Federal and private lands in New Mexico and Arizona are still threatened by spruce budworm infestations. From an economic standpoint the most serious infestations are those located on the Kaibab National Forest, Grand Canyon National Park, Mt. Taylor on the Cibola National Forest and the Chuska Unit of the Navajo Indian Reservation. Tree death in all areas is imminent unless control measures are undertaken.

Spruce budworm infestations have been noticed on forested lands throughout New Mexico and Arizona wherever mixed conifer types predominate. Control on many of these lands is dependent upon cooperation with private land owning companies who control adjacent sections of timbered areas. It is extremely doubtful that the insect can be controlled in such areas until arrangement can be made to treat the private holdings which may act as a continual source of reinfestation to Federally controlled lands.